



# Best Practice

Evidence based information sheets for health professionals

## Assessment and Management of Dysphagia in Children with Neurological Impairments

### Recommendations

- The guidelines published in 2000 remain current and recognise that assessment and management of neurologically impaired children with dysphagia requires a multidisciplinary approach and should be conducted in a family-centred manner<sup>2,4-9</sup>.
- Knowledge of normal and abnormal swallowing physiology, and other developmental factors influencing dysphagia is essential for early recognition and assessment of children at risk of dysphagia (**Grade B**).
- Awareness of the risk factors are important in the recognition and assessment of dysphagia. When dysphagia is suspected, feeding should be ceased immediately and the child's condition should be reviewed with a medical practitioner and referred to a speech pathologist for further assessment (**Grade B**).
- Poor nutritional status of the child or failure to thrive may be associated with dysphagia in children and should be considered when assessing children for presence of dysphagia (**Grade B**).
- Information on feeding difficulties should be obtained from parents and/or carers when presence of dysphagia is suspected (**Grade B**).
- A multi-disciplinary team approach is essential for the assessment and management of dysphagia. (**Grade B**)
- Growth, hydration and nutritional status should be monitored in children with dysphagia (level B). Specific management interventions, based on the individual child's needs, should be implemented (**Grade B**).
- Children with dysphagia should be monitored for signs of aspiration. For children in an acute setting, safety equipment should be readily available (e.g. oxygen and suction). Interventions, such as paced feeding, should be implemented to ensure safe swallowing (**Grade B**).
- A child's swallowing ability should be monitored. Any changes in swallowing ability should be reported to the speech pathologist or medical practitioner. (**Grade B**).
- It is important to be aware that children with neurological impairment may require cognitive and behavioural therapy as part of their dysphagia management program (**Grade B**).
- Families and caregivers caring for children with dysphagia require support, information, and reassurance (**Grade B**).
- A family-centred approach to management of dysphagia should be implemented (**Grade B**)

### Information Source

This Best Practice information sheet updates and supersedes the JBI information sheet of the same title published in 2000<sup>2</sup> which is based upon a systematic review of 25 papers<sup>3</sup>. An additional 5 papers have been identified to date.<sup>4-9</sup> Of these 30 papers, 17 were based on expert opinion, 10 were classified as descriptive studies and three were case control studies.

### Objectives

The purpose of this Best Practice sheet is to present the best available evidence for the assessment and the management of neurological impaired children with dysphagia.

### Background

At birth, the neural circuitry involved in co-ordinating sucking, swallowing and breathing is generally well developed. If swallowing is abnormal, it can not only lead to a decreased intake of milk, resulting in decreased nutrition, but potentially life threatening aspiration of milk in to the lungs, leading to choking, respiratory or pulmonary complications. Dysphagia in neurologically impaired children is generally associated with damage to, or abnormal development of the muscles controlling the feeding and swallowing process or parts of the nervous system or structures associated with them.<sup>3,6-7</sup> It is characterised by dysfunction in the sequential phases of the swallowing process. Dysphagic children can experience difficulties in tongue control and bolus manipulation, problems with movement of food from the mouth to the pharynx and/or delayed pharyngeal swallow, resulting in increased risk of aspiration of food into the airway. Dysphagia can be mild, moderate or severe.

### Grades of Recommendation

These Grades of Recommendation have been based on the JBI-developed *2006 Grades of Effectiveness*<sup>1</sup>

**Grade A** Strong support that merits application

**Grade B** Moderate support that warrants consideration of application

**Grade C** Not supported

## Definition of terms

**Dysphagia** is defined as the difficulty in swallowing.

**Neurological impairment** refers to abnormal nervous system function specifically related to swallowing.

**Oral Phase** – involves voluntary control and is mediated by both sensory and motor cranial nerves.

**Pharyngeal Phase** – during this phase of swallowing, the airway closes and the soft palate is elevated preventing the aspiration of food.

**Oesophageal Phase** – during this phase of swallowing, the lower oesophageal sphincter opens and the bolus is transported to stomach by peristaltic movement.

## Common Signs and Symptoms of Dysphagia in neurologically impaired Children

A child or infant may present with more generalised symptoms or specific swallowing problems.

### Generalised Symptoms

- Failure to thrive
- Difficult feeder
- Recurring infections of the upper respiratory tract
- Food refusal
- Signs of increased effort, fatigue and reduced level of alertness

### Specific Symptoms

- Increased oral tactile sensitivity.
- Extreme sensitivity to touch either in or around mouth
- Withdrawal from food
- Facial grimacing
- Intolerance to some food textures
- Spitting food
- Increased duration of feeding i.e. greater than 45 minutes
- Difficulty in managing liquids, pureed foods, semi-solid and solid foods

Although not specifically related to neurological dysphagia, children with dysphagia often suffer from upper respiratory tract infections and gastroesophageal reflux (GOR). Signs of GOR include: irritability; inability to tolerate large feeds, early satiation; and frequent vomiting.

All signs and symptoms are based on Grade A and B evidence.<sup>3-9</sup>

Some symptoms relate to a particular phase of the swallowing process;

### Oral Phase

Choking, gagging, excessive drooling, weak suck, tongue thrust, Spillage of food from the mouth due to lack of tongue control.

### Pharyngeal Phase

Gagging, choking with ingestion of liquids and food, coughing, gagging, drooling, nasopharyngeal reflux, respiratory distress, including stridor and wheeze

### Oesophageal Phase

Signs of respiratory distress during feeding; changes in normal patterns of respiration; breathing with effort; noisy breathing; signs of fatigue during feeding.

## Assessment Criteria

When dysphagia is suspected, feeding should be ceased immediately and the child referred to a medical practitioner and speech pathologist for assessment.

A useful tool in determining the cause of dysphagia is a feeding history from parents and caregivers of the child. The following information should be obtained for further assessment;

- Any history with problems with sucking, breastfeeding and commencement of solids
- Problems with chewing and spitting food or eating only small amounts of food.
- Tolerance to particular foods and textures
- Coughing and noisy breathing (may suggest aspiration or residue in the pharynx)
- Food refusal (may indicate pain with swallowing)
- Distress during feeding (may indicate pain with swallowing)
- A history of excessive duration of meal times
- Child's management of food in the mouth (eg spits out food at the end of a meal)
- Specific times of the day when the child feeds better
- Influence of environment on the success of feeding (eg child will only eat under certain conditions, or in certain places)
- Feeding methods of caregivers – whether some techniques are more effective than others
- Positioning of child during feeding.

A combination of assessment tools should be used to assess the reason behind the dysphagia. They include:

- clinical bedside evaluation by a speech pathologist
- oral motor examination (structural abnormalities of the tongue, palate and jaw; difficulties in any of the phases of swallowing; abnormalities in oral, laryngeal or pharyngeal movement)
- radiological examinations (e.g. videofluoroscopic modified barium swallow study).
- neurological assessment for presence of dystonia which may affect ability to feed.

Additional assessments should include

- the child's hydration and nutritional status
- additional assessments of growth and development.

The reasons for abnormal swallowing may be relatively easy to determine (eg obvious structural abnormalities of the jaw, tongue, nervous system etc), however feeding that is difficult or uncomfortable for the child as a result of these abnormalities may persist as a learned aversion to feeding. Working together with the child and the family/caregivers, insights from a range of experts will allow determination of the best management strategy of each individual case.

## Risk Factors Associated with Dysphagia

Children at risk of dysphagia include those with multiple disabilities, cerebral palsy, traumatic head injuries, genetic disorders, cerebral infarcts, Rett Syndrome, Down Syndrome, upper motor impairments, dystonia, dyskinesia, hypotonia or neuromuscular junction disorders, for example myasthenia gravis and Duchenne's muscular dystrophy.<sup>3-6</sup>

Some neuroleptics and the medications used to control seizures may reduce alertness and ability to swallow. Muscle relaxants administered to children with spasticity may affect ability to swallow (Grade B).

Dysphagia can lead to dehydration, low nutrition intake and low body weight.

## Management of Dysphagia

The main objectives of managing a neurologically impaired dysphagic child are to increase and maintain adequate nutrition for good growth and to prevent further complications due to aspiration of food into the lungs. As this is most often done in a home setting, it is important that treatment strategies promote a family-centred approach (Grade B).

Families and caregivers caring for children with dysphagia require support, information, reassurance as well as appreciation for their efforts (Grade B). Information should be provided to assist caregivers, regarding;

- strategies for oral feeding.
- preparation of varied and nutritious meals.
- availability of adaptive equipment.
- how to position the child whilst feeding
- positive interactive behaviours.
- how to determine progression of the child's swallowing skills.

A multi-disciplinary approach to provision of services with parental involvement in assessment and management of their child's dysphagia is important (Grade A and B). Members of this multidisciplinary team should include; medical practitioner, speech pathologist, physiotherapist, occupational therapist, dietician and nurses. Knowledge of normal and abnormal swallowing and therapeutic techniques is essential for managing the rehabilitation of a child with dysphagia. A child's developmental age

and current level of functional swallowing skills should be considered in any management program (Grade B). Commonly used interventions are listed below.

### Monitoring nutrition and hydration

The aim of monitoring is to assist in maintenance of nutrition and hydration (Grade B)

- Dietary monitoring and ongoing assessment by a dietician with experience in paediatrics.
- Record fluid intake and loss (including vomiting and drooling of saliva).
- Record child's oral food intake and weight gain. (Some children may require supplementary non-oral feeding. The amount should be included in the child's total fluid and food intake).
- Monitor duration of meal times.

### Positioning of the child during feeding

The aim is to position the child so that he/she is able to maintain a central body alignment, reducing the likelihood of choking and food aspiration. The position of the child will depend on the extent of dysphagia and which swallowing stage is abnormal.

In children with severe cerebral palsy and feeding problems, feeding position can be dependent on degree of dysphagia and whether it is mainly in the oral or pharyngeal phase. Neck extension is not encouraged as it can impair laryngeal movement and pharyngeal clearance and place the child at increased risk of aspiration (Grade B). Visual judgement of an appropriate and safe position may not be possible and a videofluoroscopic modified barium swallow study may be necessary (Grade B).

A position where the chin is tucked and a 30° reclining position, with flexed hips reduces aspiration in children with major oral phase swallowing problems, whereas an erect position with flexed neck and hips for children with minor oral phase but greater pharyngeal phase swallowing difficulties (Grade B).

## Diet

The aim of a dietary modification is to assist children in managing different bolus sizes, flavours and textures. Modifications will vary according to the needs of each child. Videofluoroscopic modified barium swallow studies may be used to determine the safest textures. The following are some examples of modifications that may be recommended (Grade B).

### • The size of the bolus

Small bite sizes are generally recommended, however in some instances larger boluses may be beneficial because they increase the child's sensory awareness in the oral cavity and assist in bolus formation and reduced pharyngeal transit time. Size may need to be varied with different textured foods and the child's ability to swallow effectively.

Note: In children with neuromuscular disorders (and weakened or uncoordinated swallowing) a semi-solid consistency may be swallowed more easily as a single bolus.

### • The texture of the food

Thickened fluids assist in reducing the risk of aspiration. Use of starch based thickeners is recommended. Children with swallowing impairment may tolerate a cohesive texture better than a thinner, more liquid food, but may require a greater time for chewing. When considering changes in texture, elasticity and viscosity of food should also be considered. A variety of flavours of the recommended texture should be offered to each child. Texture preferences and tolerance should be recorded to determine those tolerated most effectively.

### • The food temperatures:

Children vary in their responses to food temperature, with no evidence for an optimal food temperature.

## Supportive devices in management of dysphagia

Supportive devices may assist children with oral phase-swallowing difficulties control the size of the bolus and learn to feed themselves. Access and availability of supportive devices may depend on setting and country. Supportive devices may include:

- Child's wheelchair/pillows
- Different sizes and shapes of spoons
- Plate guards and scoop bowls,
- built-up handles for forks and spoons
- Angled and swivel handled spoons with devices such as slings, arm and finger cuffs

Referral to an occupational therapist and a physiotherapist is required when the need for such devices is identified.

## Prevention of complications due to aspiration

Observe child for signs of aspiration (coughing, choking and respiratory distress) and record pattern and rate of respiration. If aspiration is suspected oral feeding should be stopped until the cause is investigated (Grade B).

Note: Be aware that silent aspiration (i.e. absence of signs) has been reported in children with dysphagia and can occur before, during and after swallowing (Grade B).

Observe for cognitive impairment. If cognitive impairment is suspected, child should be referred to appropriate professionals for assessment to ensure they are able to follow instructions when assisted with feeding. Verbal instructions should be provided at the child's level of understanding and mental age. Children with memory impairment or are prone to distraction should be reminded constantly to chew and swallow their food. Their mouths should be checked at the completion of feeding to prevent choking from any pocketed residual meal.

Observe for behavioural factors: Use non-aggressive strategies in managing food refusal. Impulsive children will require close one to one monitoring. Keep meals out of child's reach, remind them to eat slowly,

and ensure a bolus is swallowed before offering another bite. In agitated children with head injuries, a distraction-free environment and familiar feeders will assist in maintaining oral feeding.

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Ms Prabha Ramritu, Queensland Centre for Evidence Based Nursing & Midwifery, Australia.


In addition this Best Practice information sheet has been reviewed by nominees of International Joanna Briggs Collaborating Centres.

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**Evidence-based Practice**  
evidence, context,  
client preference  
judgement

This *Best Practice* information sheet presents the best available evidence on this topic. Implications for practice are made with an expectation that health professionals will utilise this evidence with consideration of their context, their client's preference and their clinical judgement.<sup>10</sup>




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